

STATE OF CALIFORNIA
The Resources Agency
DEPARTMENT OF WATER RESOURCES

BULLETIN NO. 106-2

GROUND WATER OCCURRENCE AND QUALITY,
SAN DIEGO REGION

VOLUME II

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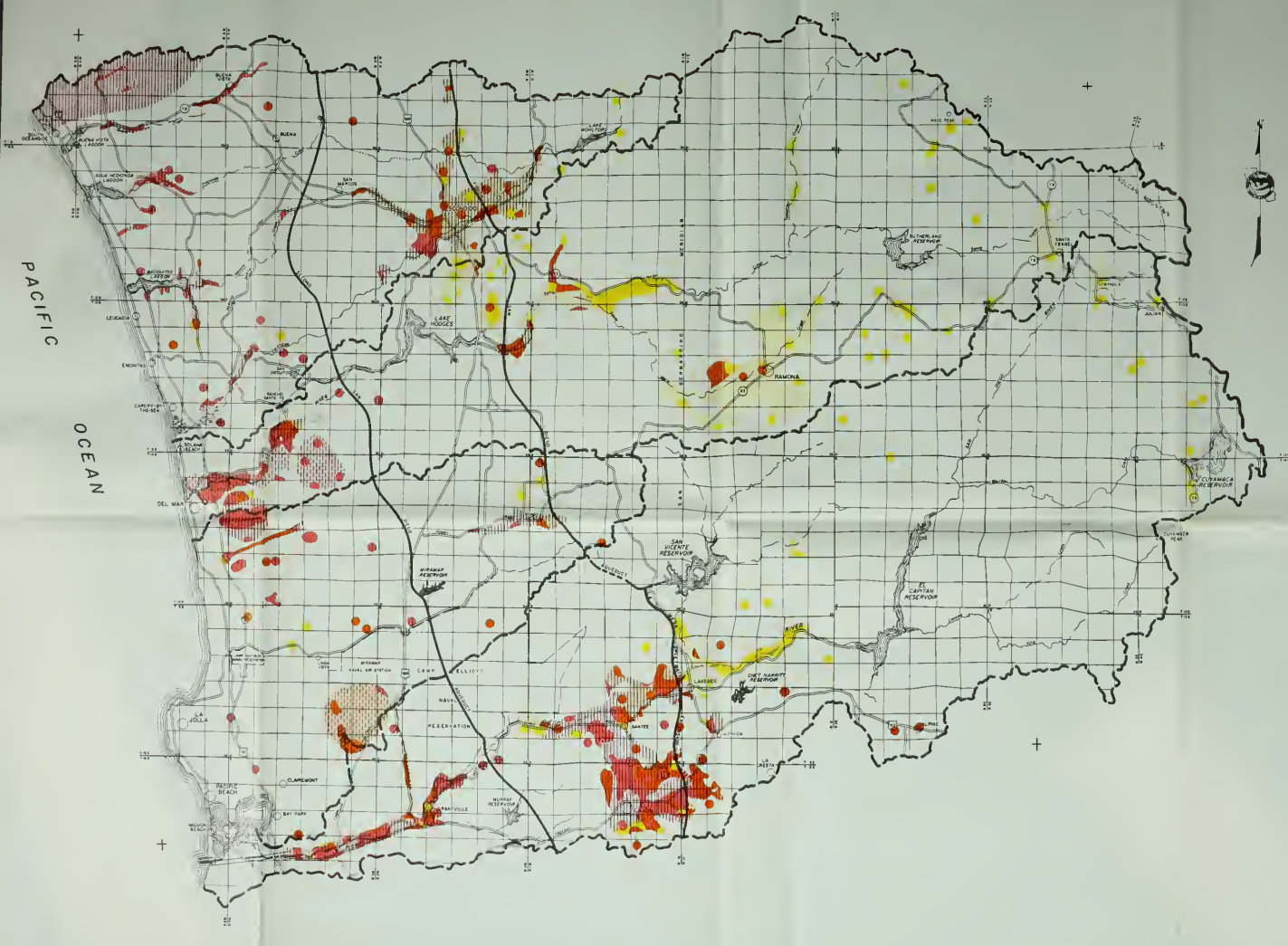
(NOTE: Plates 1, 4A, 4B, 4C, 5, 7, and 10 are in Volume I)

<u>Plate No.</u>	<u>Title</u>
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2A,B,C	Areal Geology
3A,B,C	Subsurface Lithology of Selected Areas
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LEGEND

Symbol	Meaning
Yellow	BETTER
Red	POOR

QUALITY, COMPARISON

Symbol	Meaning
Yellow	LESS THAN 100
Red	GREATER THAN 100

QUANTITY, COMPARISON

Symbol	Meaning
Yellow	LESS THAN 10
Red	GREATER THAN 10

QUALITY, COMPARISON

Symbol	Meaning
Yellow	LESS THAN 10
Red	GREATER THAN 10

QUANTITY, COMPARISON

Symbol	Meaning
Yellow	LESS THAN 10
Red	GREATER THAN 10

QUALITY, COMPARISON

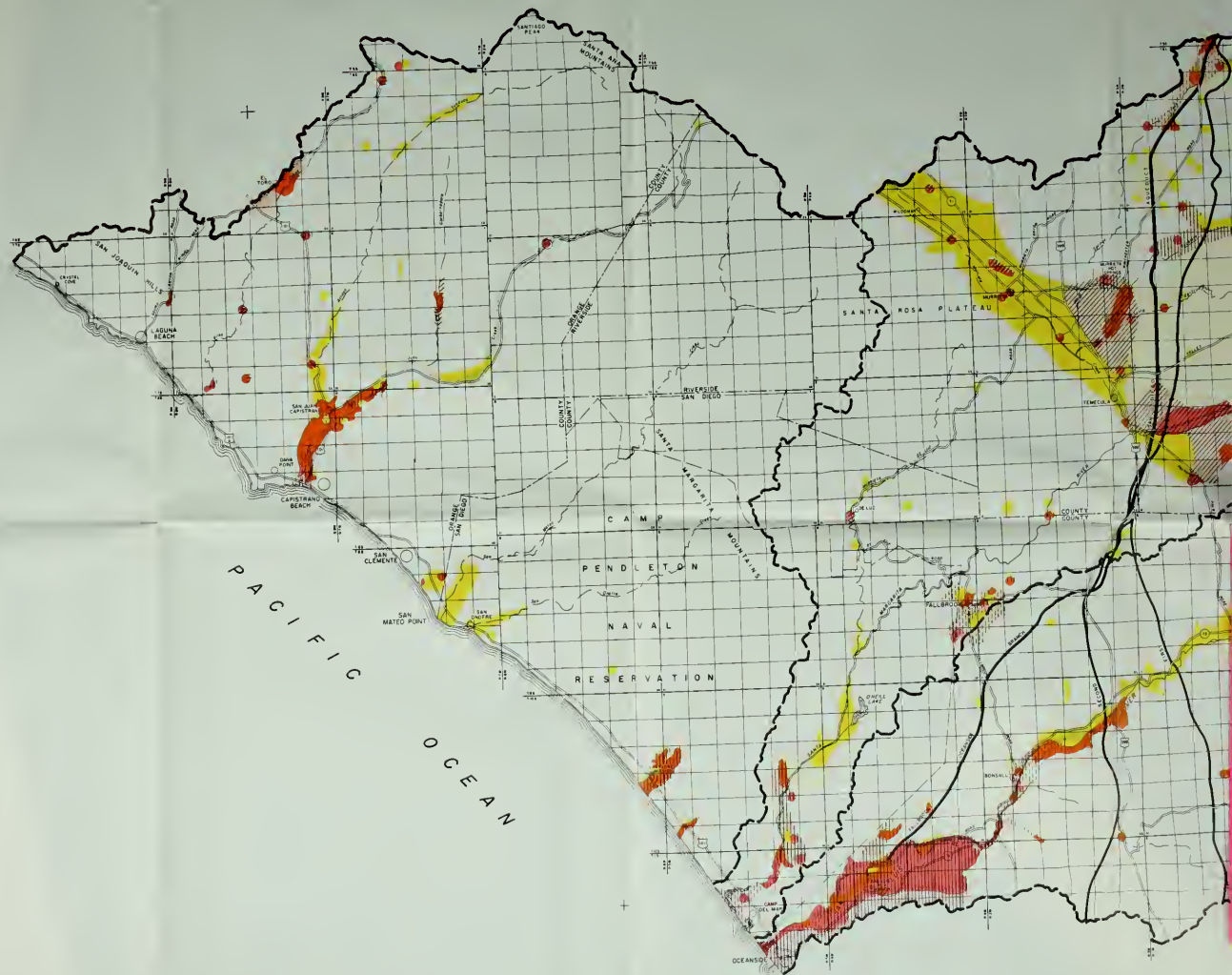
Symbol	Meaning
Yellow	LESS THAN 10
Red	GREATER THAN 10

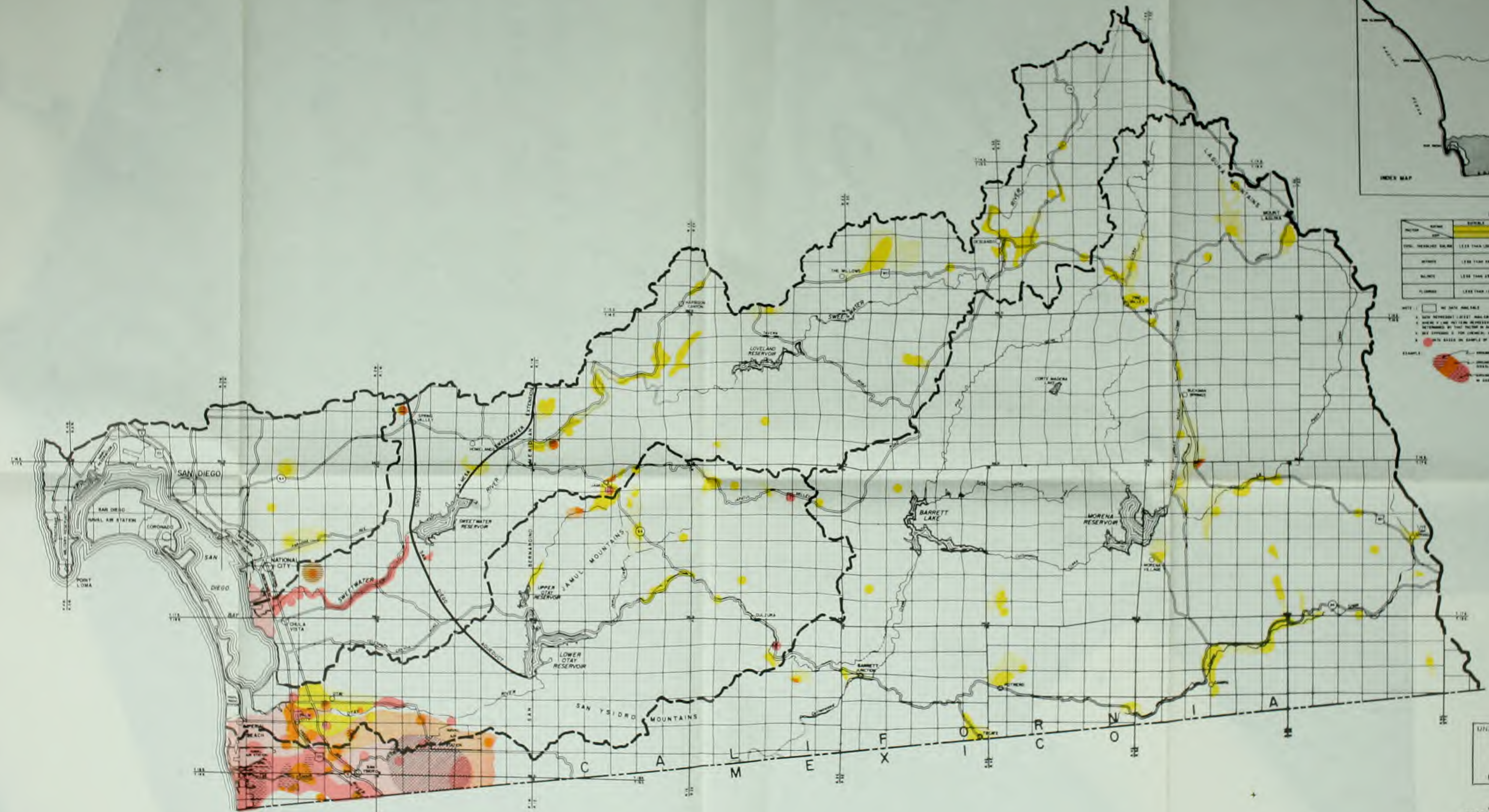
QUANTITY, COMPARISON

Symbol	Meaning
Yellow	LESS THAN 10
Red	GREATER THAN 10

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DEPARTMENT OF WATER RESOURCES
SOUTHERN DISTRICT
GROUND WATER OCCURRENCE AND QUALITY
SAN DIEGO REGION
RATING OF GROUND WATER FOR IRRIGATION USES
SCALE 1:50,000





LEGEND

WATER	EXCELLENT	GOOD	FAIR	POOR
TOTAL DISSOLVED SOLIDS	LESS THAN 100	100 - 250	250 - 500	GREATER THAN 500
CHLORIDE	LESS THAN 25	25 - 50	50 - 100	GREATER THAN 100
SULFATE	LESS THAN 250	250 - 500	500 - 1000	GREATER THAN 1000
FLUORIDE	LESS THAN .10	.10 - .20	.20 - .30	GREATER THAN .30

NOTE: 1. NO DATA AVAILABLE
2. WHEN NECESSARY, BEST AVAILABLE INFORMATION, GENERALLY SUBMITTED TO THE STATE OF CALIFORNIA, DEPARTMENT OF WATER RESOURCES, IS USED TO DETERMINE THE RATING OF THE WATER. WHEN THE DATA IS INADEQUATE TO DETERMINE THE RATING, THE WATER IS RATED AS "POOR".
3. RAY SPREADS 5 FOR CHLORIDE ANALYSIS
4. DATA BASED ON SAMPLE OF ONE WELL

EXAMPLE: 1. GROUND WATER RATES HIGHLY BECAUSE OF HIGH SALINITY
2. GROUND WATER RATES HIGHLY BECAUSE OF HIGH TOTAL DISSOLVED SOLIDS
3. GROUND WATER RATES HIGHLY BECAUSE OF HIGH FLUORIDE IN ADDITION TO HIGH TOTAL DISSOLVED SOLIDS

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SOUTHERN DISTRICT
GROUND WATER OCCURRENCE AND QUALITY
SAN DIEGO REGION
RATING OF GROUND WATER
FOR DOMESTIC USES
SCALE OF 1000
1968

PACIFIC

OCEAN



LEGEND

NAME	QUALITY	QUANTITY	STATUS
MELT	GOOD	LESS THAN 100	DECREASED
TOTAL REQUIRED	LESS THAN 100	LESS THAN 100	DECREASED
BLADE	LESS THAN 100	LESS THAN 100	DECREASED
BLADE	LESS THAN 100	LESS THAN 100	DECREASED
FLUORE	LESS THAN 100	LESS THAN 100	DECREASED

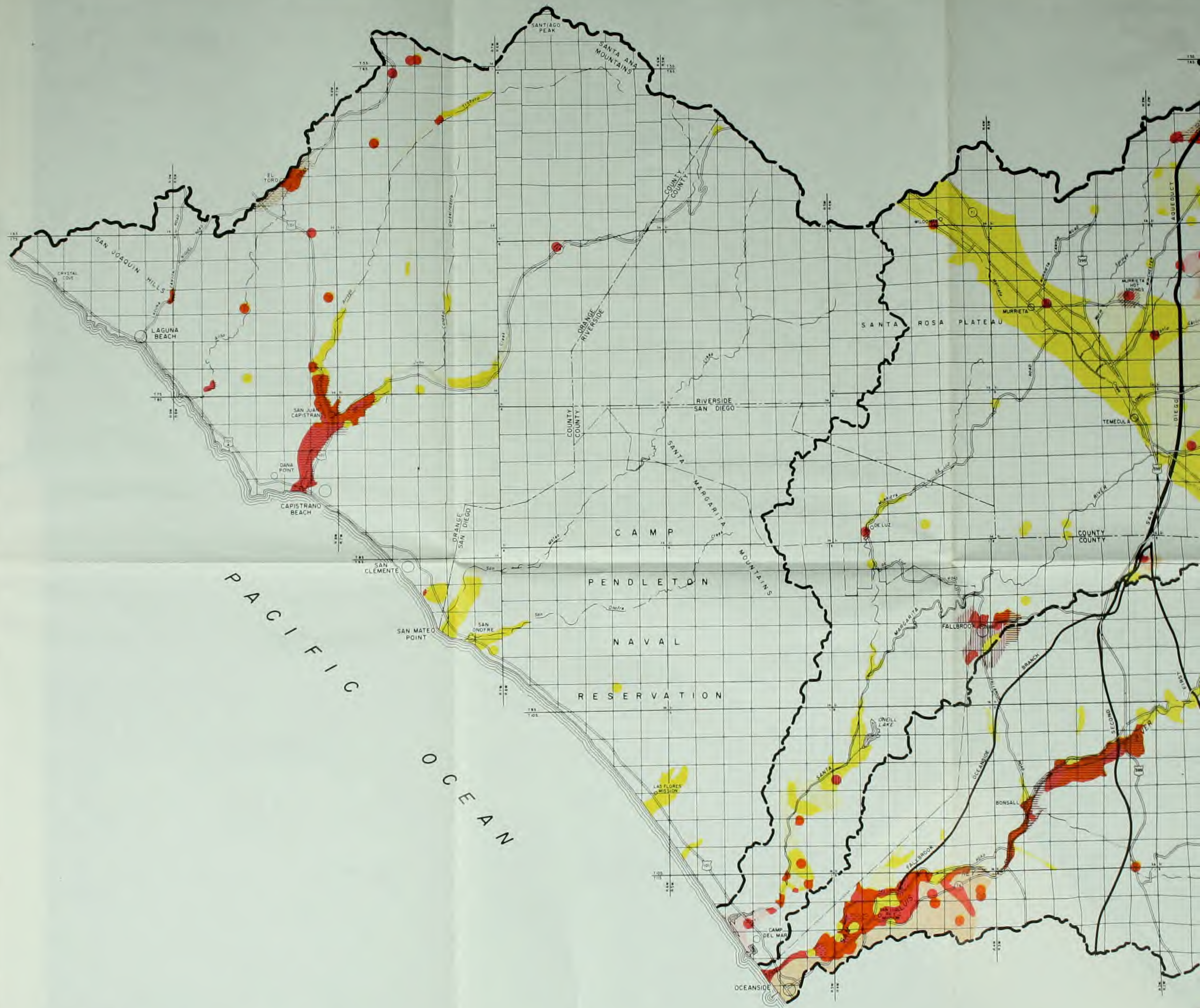
NOTE: 1. NO DATA AVAILABLE
 2. DATA BASED ON BEST AVAILABLE INFORMATION, USUALLY SUBJECTIVE TO 1960
 3. DATA BASED ON BEST AVAILABLE INFORMATION, USUALLY SUBJECTIVE TO 1960
 4. DATA BASED ON BEST AVAILABLE INFORMATION, USUALLY SUBJECTIVE TO 1960
 5. DATA BASED ON BEST AVAILABLE INFORMATION, USUALLY SUBJECTIVE TO 1960

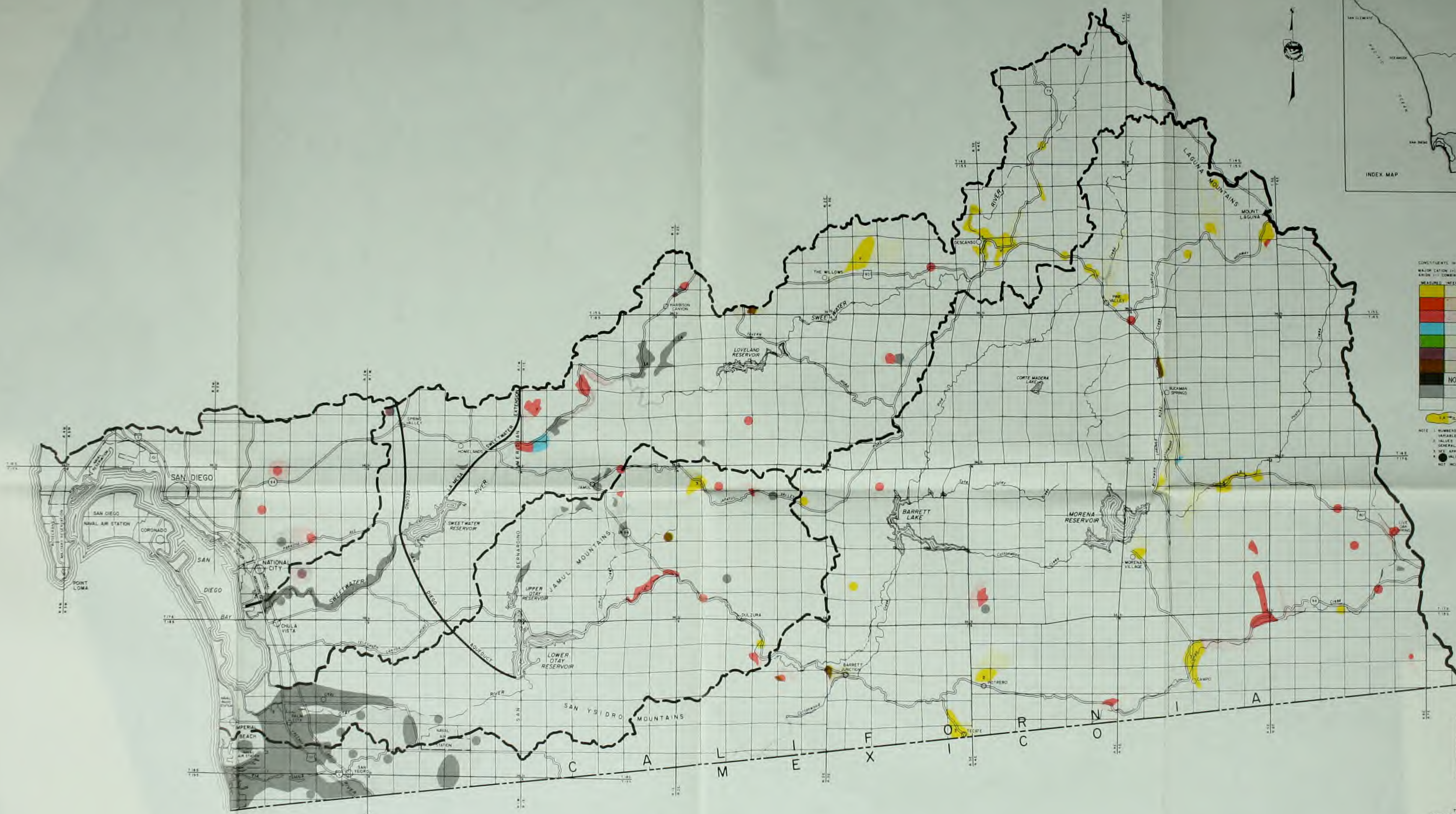
EXAMPLE: 1. DATA BASED ON BEST AVAILABLE INFORMATION, USUALLY SUBJECTIVE TO 1960
 2. DATA BASED ON BEST AVAILABLE INFORMATION, USUALLY SUBJECTIVE TO 1960
 3. DATA BASED ON BEST AVAILABLE INFORMATION, USUALLY SUBJECTIVE TO 1960
 4. DATA BASED ON BEST AVAILABLE INFORMATION, USUALLY SUBJECTIVE TO 1960
 5. DATA BASED ON BEST AVAILABLE INFORMATION, USUALLY SUBJECTIVE TO 1960

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 DEPARTMENT OF WATER RESOURCES
 DIVISION OF WATER RESOURCES
 GROUND WATER OCCURRENCE AND QUALITY
 SAN DIEGO REGION

RATING OF GROUND WATER
 FOR DOMESTIC USES
 SCALE 1:50,000





LEGEND

CONSTITUENTS IN GROUND WATER

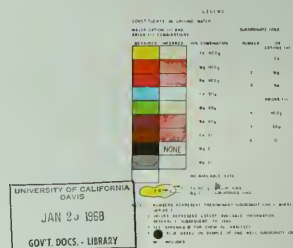
MEASURED	INTERFERED	ION COMBINATION	NUMBER	ION CATIONS (+)
CP	NO ₂	Ca	1	Ca
Mg	NO ₃	Mg	2	Mg
Na	NO ₃	Na	3	Na
Ca	SO ₄	Ca	4	Ca
Mg	SO ₄	Mg	5	Mg
Na	SO ₄	Na	6	Na
Ca	Cl	Ca	7	Ca
Mg	Cl	Mg	8	Mg
Na	Cl	Na	9	Na

NO AVAILABLE DATA

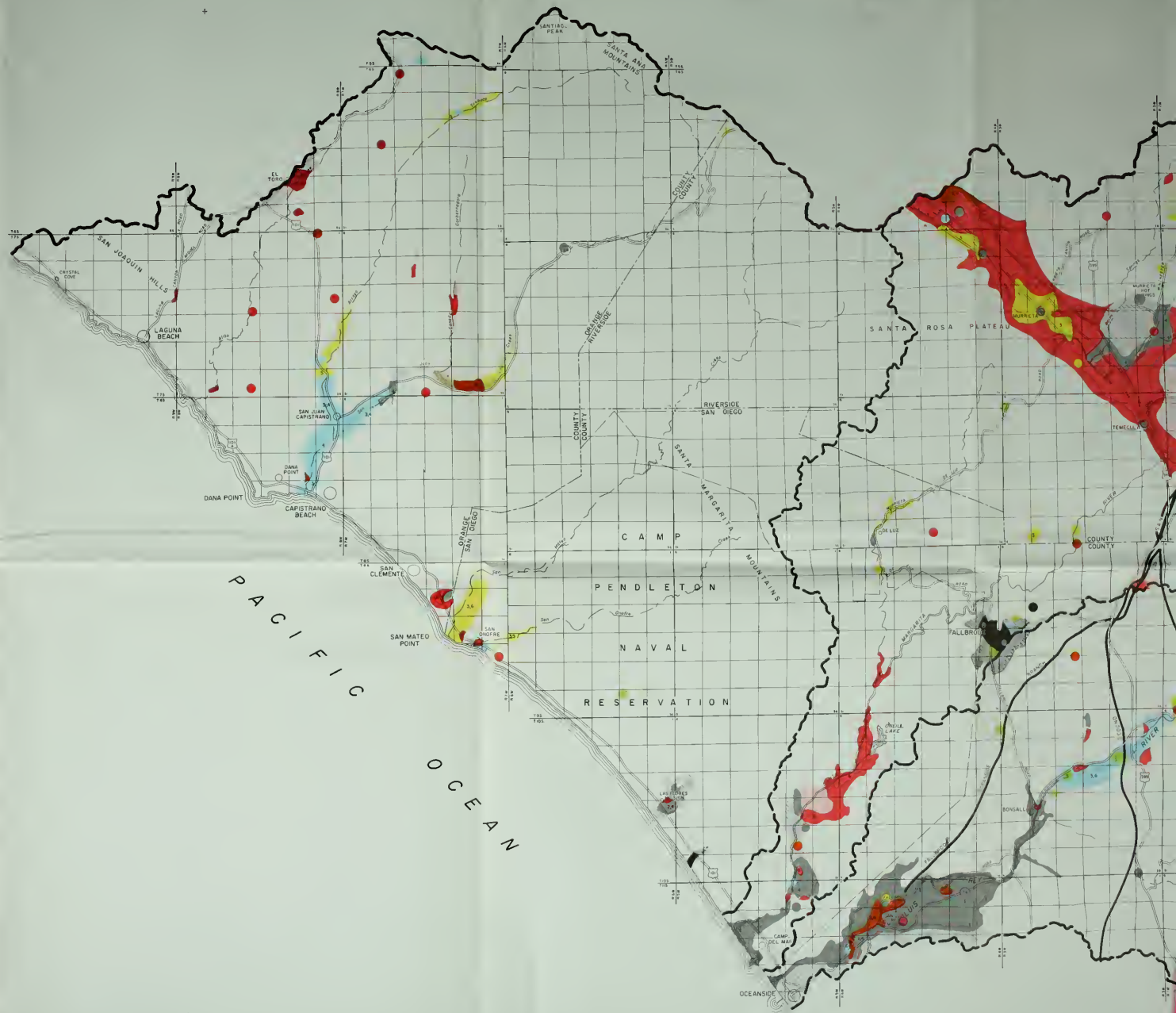
NOTE: 1. NUMBERS REPRESENT PRESENTED SUBORDINATE IONS "V" WHERE VARIABLE.
 2. VALUES REPRESENT LATEST AVAILABLE INFORMATION, GENERALLY SUBSEQUENT TO 1960.
 3. SEE APPENDIX B FOR CHEMICAL ANALYSES.
 4. * VALUES BASED ON SAMPLES OF ONE WELL, SUBORDINATE IONS NOT INCLUDED.

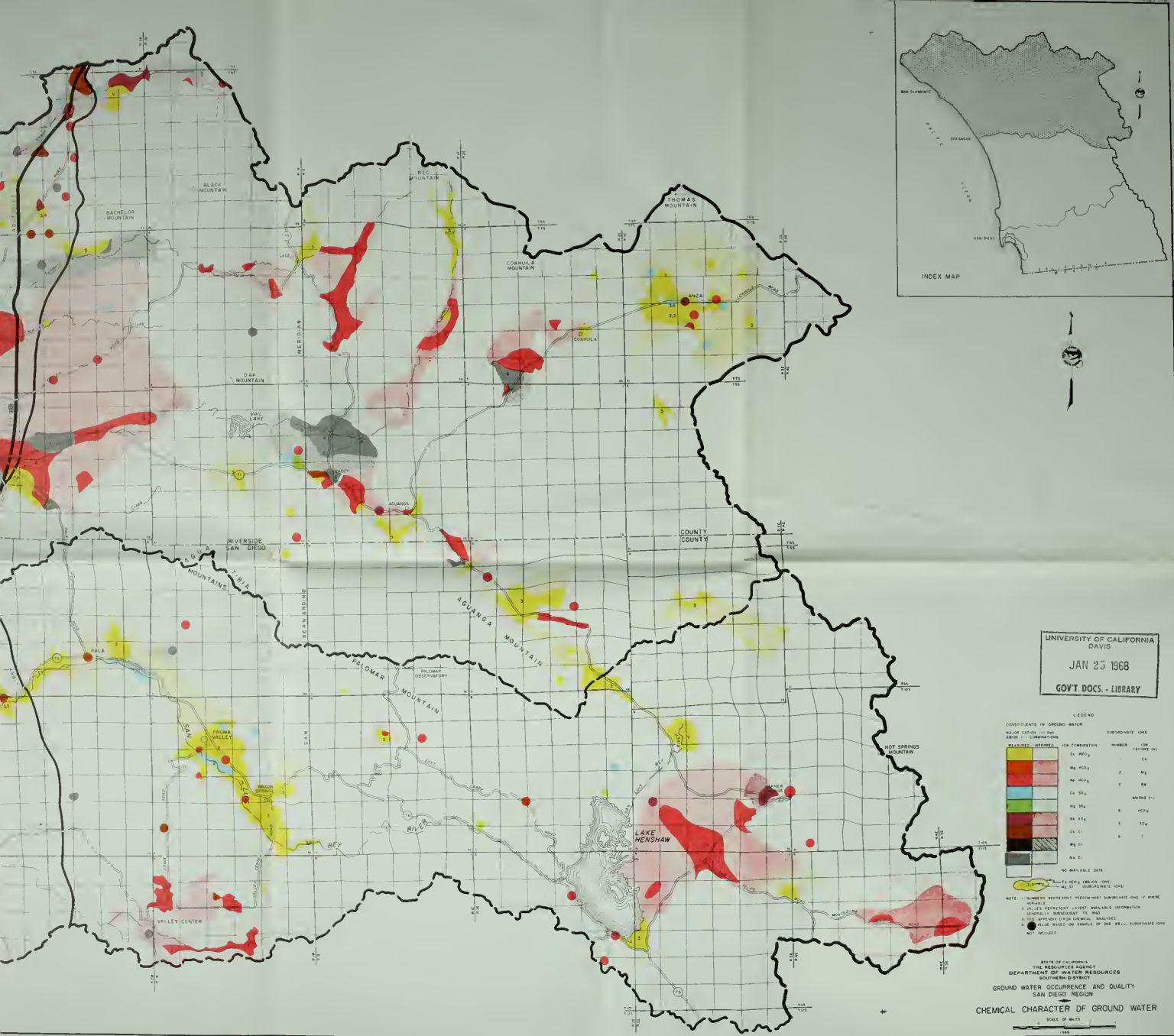
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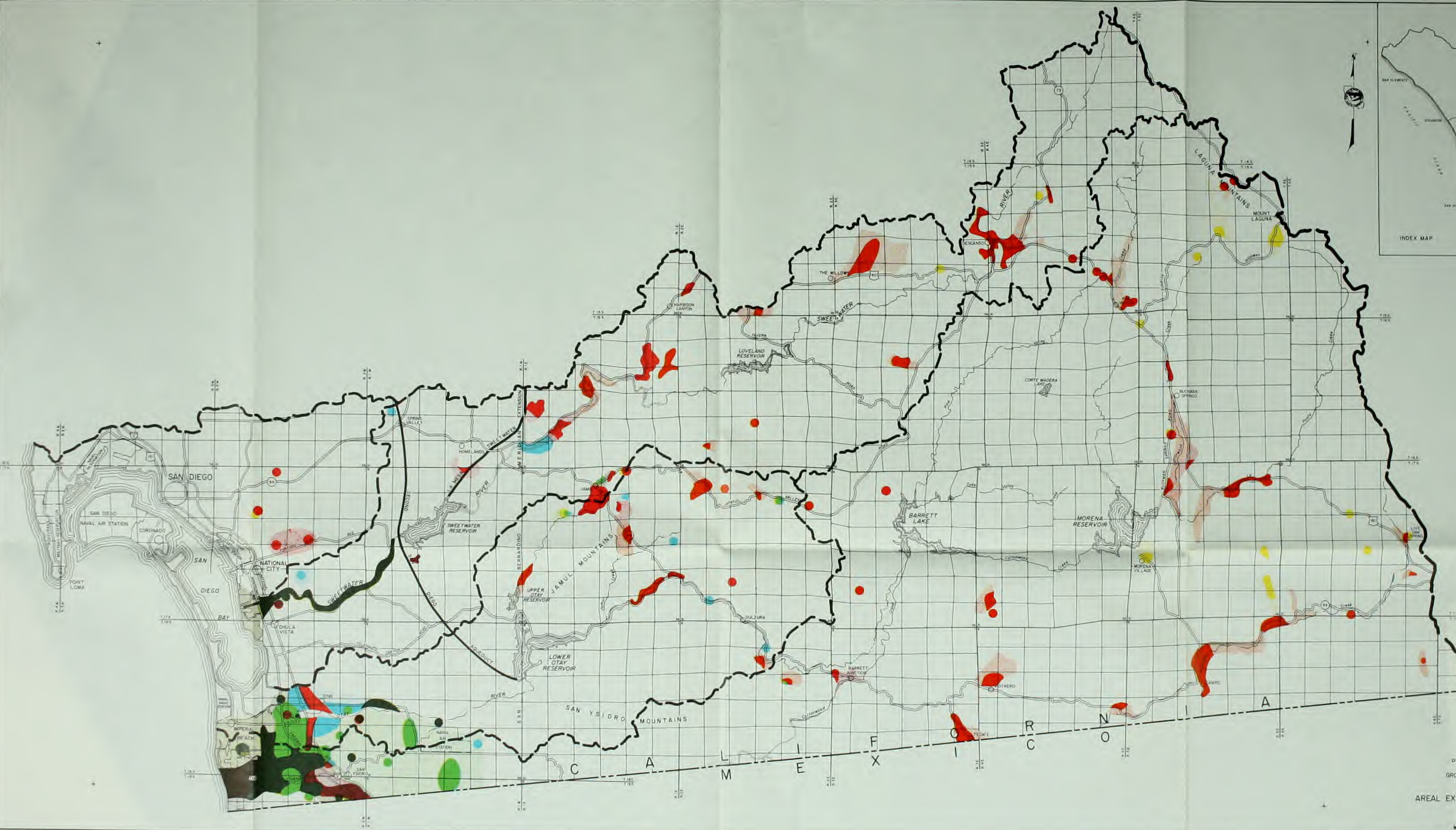
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 THE RESOURCES AGENCY
 DEPARTMENT OF WATER RESOURCES
 SOUTHERN DISTRICT
 GROUND WATER OCCURRENCE AND QUALITY
 SAN DIEGO REGION
 CHEMICAL CHARACTER OF GROUND WATER
 SCALE OF MILES
 0 1 2 3 4 5



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SOUTHERN DISTRICT
GROUND WATER OCCURRENCE AND QUALITY
SAN DIEGO REGION
CHEMICAL CHARACTER OF GROUND WATER
SCALE OF MILES







LEGEND

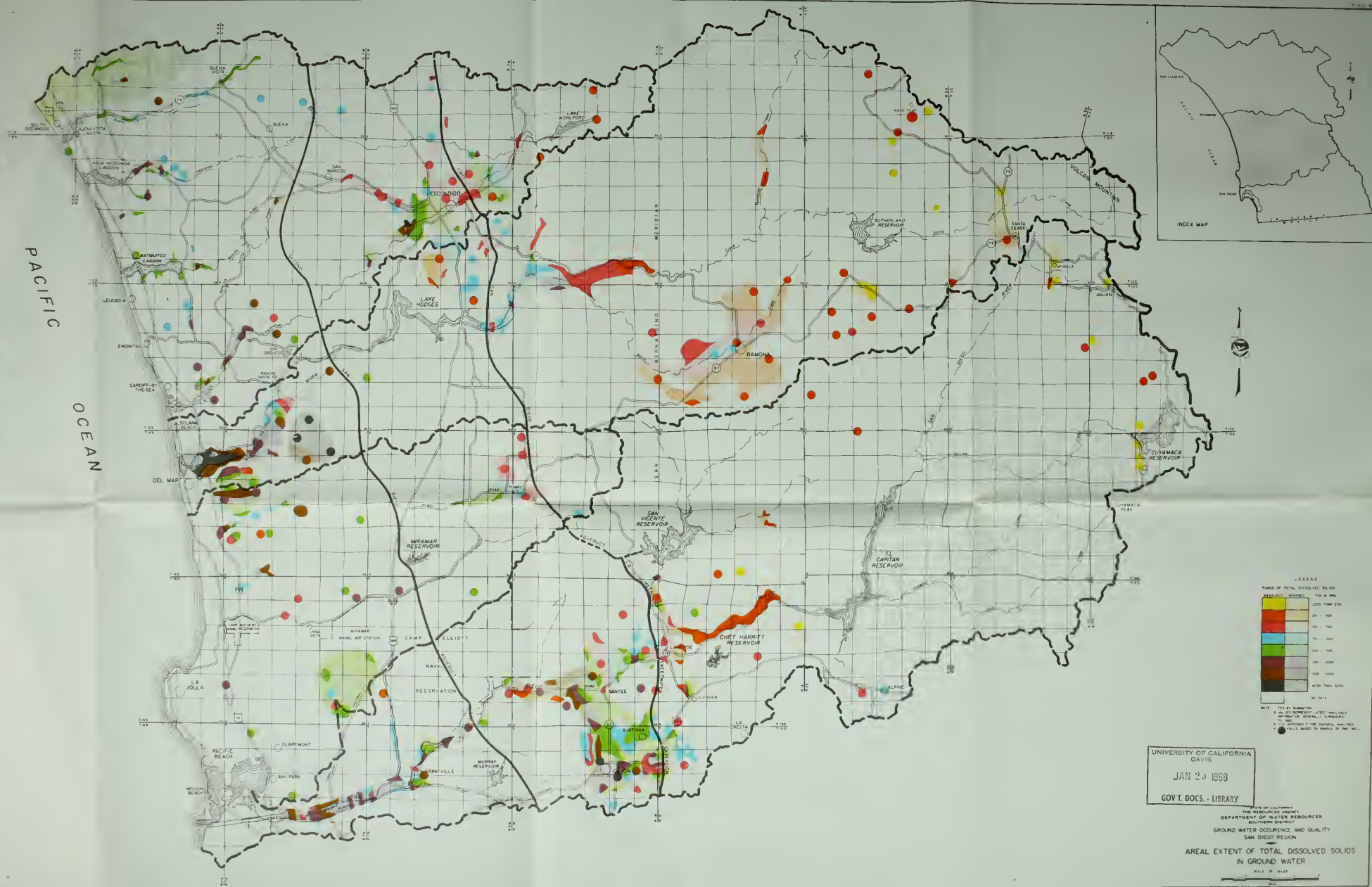
RANGE OF TOTAL DISSOLVED SOLIDS
MEASURED (PPM) UNDETECTED (PPM)

RED	LESS THAN 250	NO DATA
ORANGE	251 - 500	
YELLOW	501 - 750	
GREEN	751 - 1000	
BLUE	1001 - 1500	
BLACK	1501 - 2000	
	2001 - 3000	
	MORE THAN 3000	

NOTE: 1. USE BY SUMMATION.
2. VALUES REPRESENT LATEST AVAILABLE INFORMATION, GENERALLY SUBSEQUENT TO 1960.
3. SEE APPENDIX FOR CHEMICAL ANALYSES.
4. ● VALUE BASED ON SAMPLE OF ONE WELL.

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GROUND WATER OCCURRENCE AND QUALITY
SAN DIEGO REGION
**AREAL EXTENT OF TOTAL DISSOLVED SOLIDS
IN GROUND WATER**
SCALE OF MILES
0 1 2 3 4 5 6 7 8 9 10
1960



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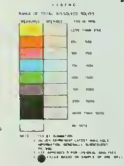
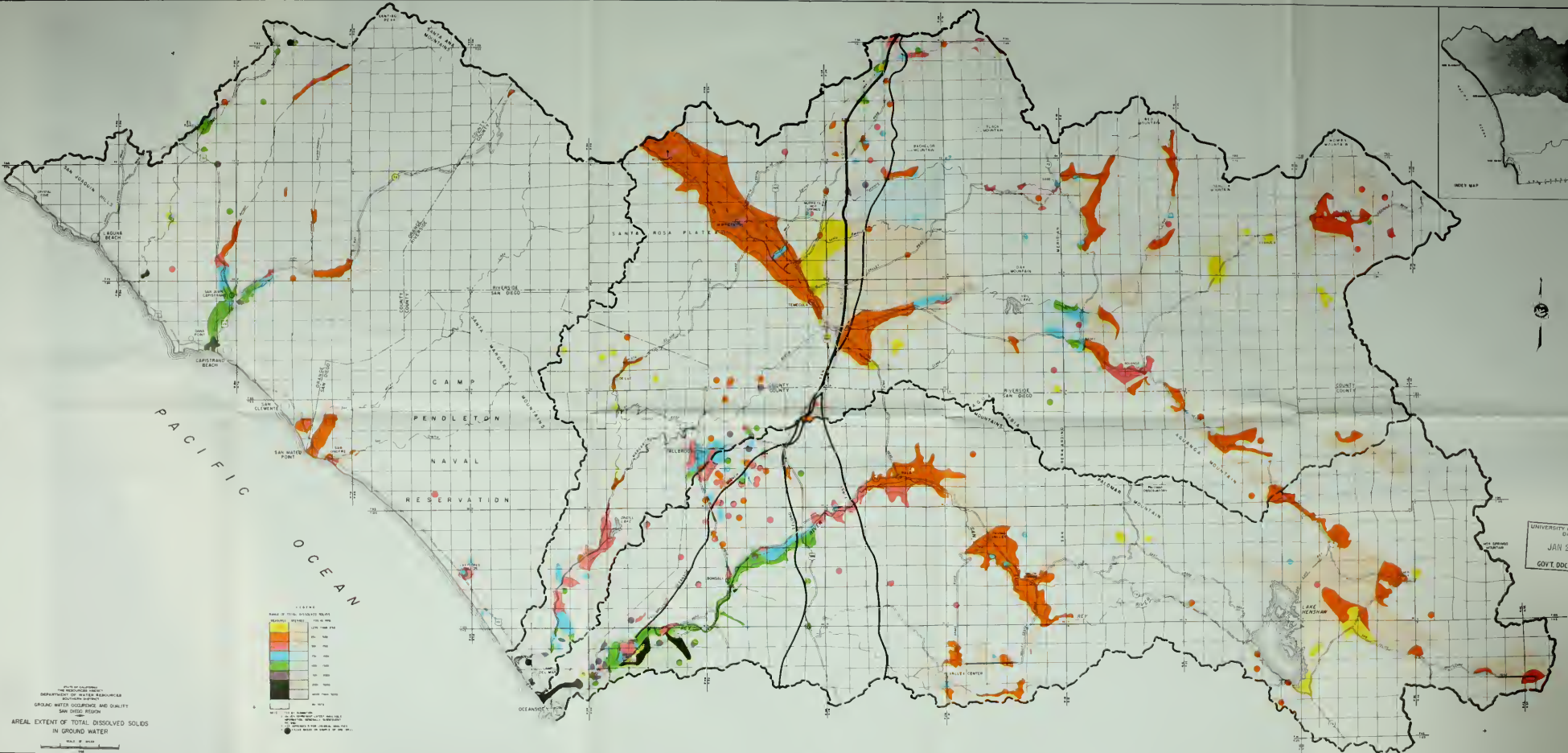
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DEPARTMENT OF WATER RESOURCES
SOUTHERN DISTRICT
GROUND WATER OCCURRENCE AND QUALITY
SAN DIEGO REGION

AREAL EXTENT OF TOTAL DISSOLVED SOLIDS
IN GROUND WATER

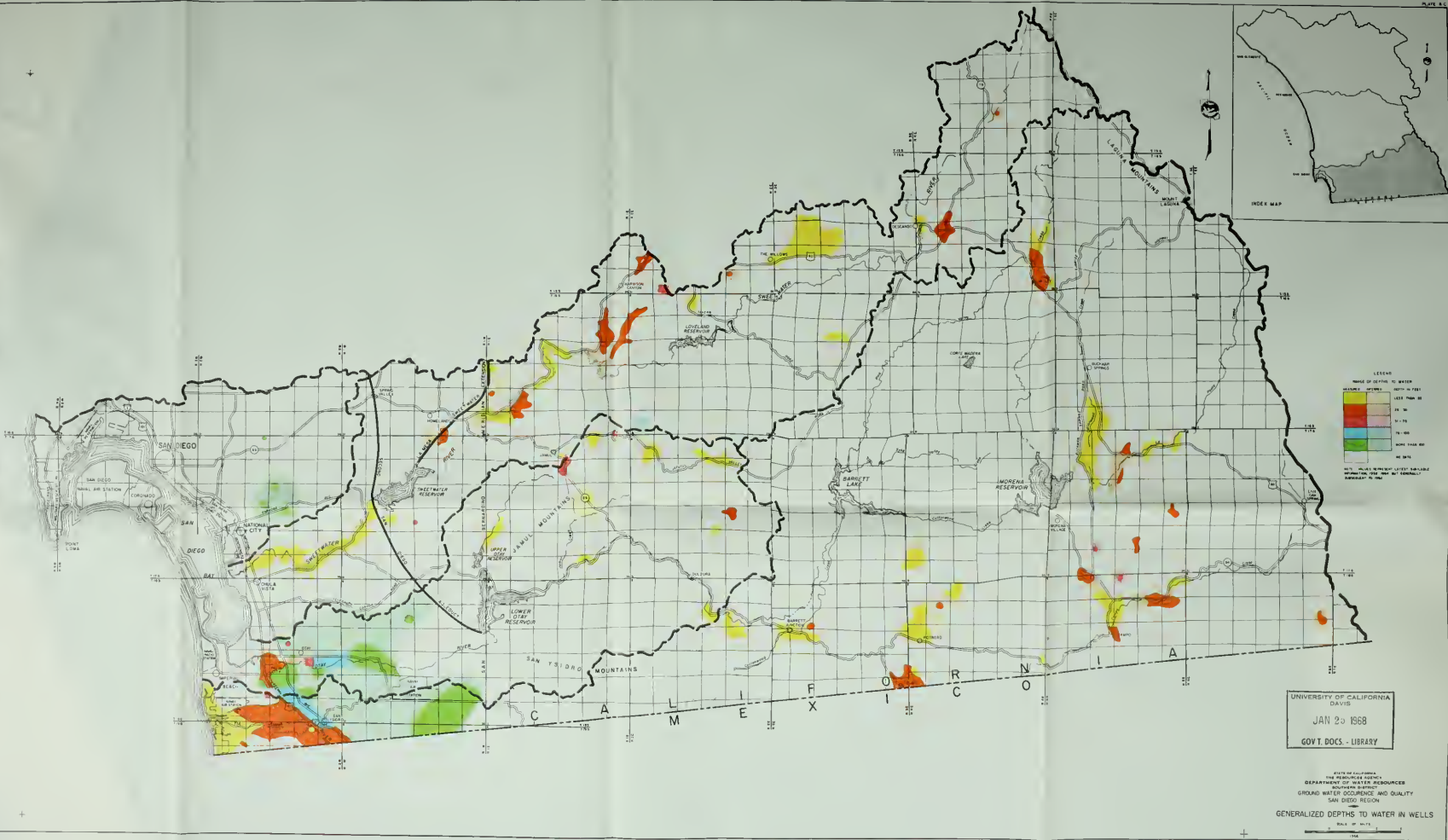
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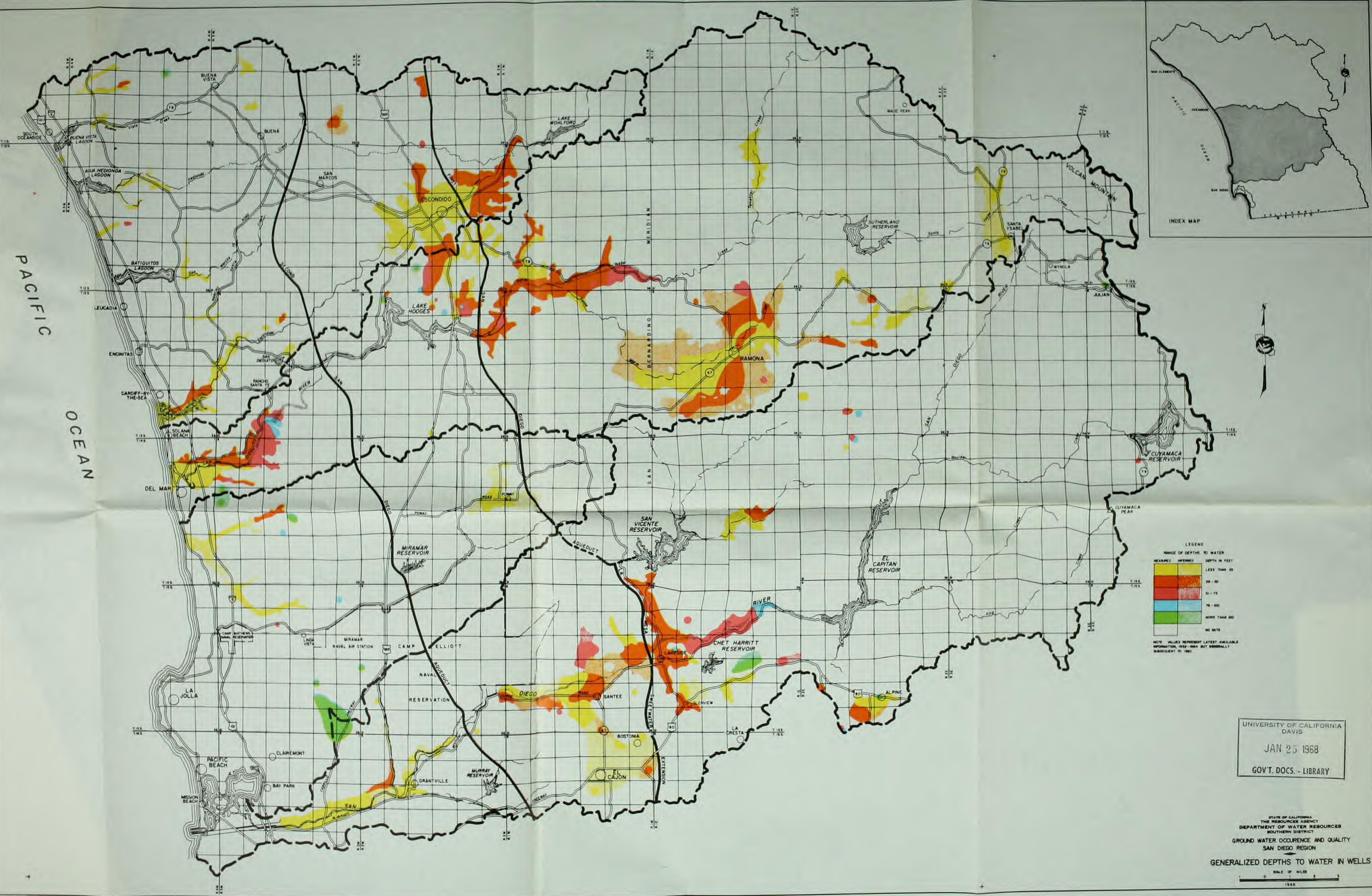


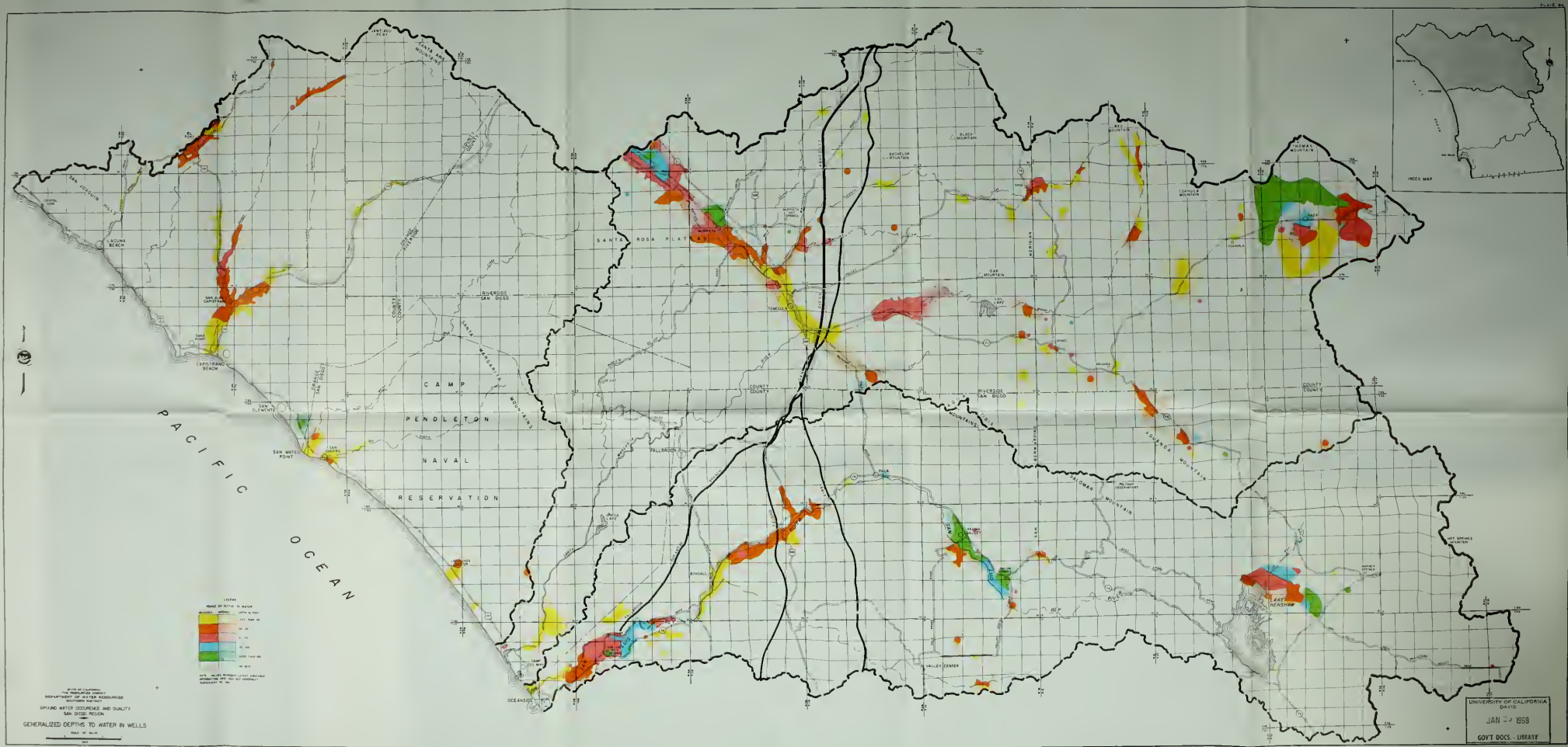
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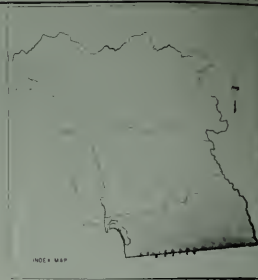
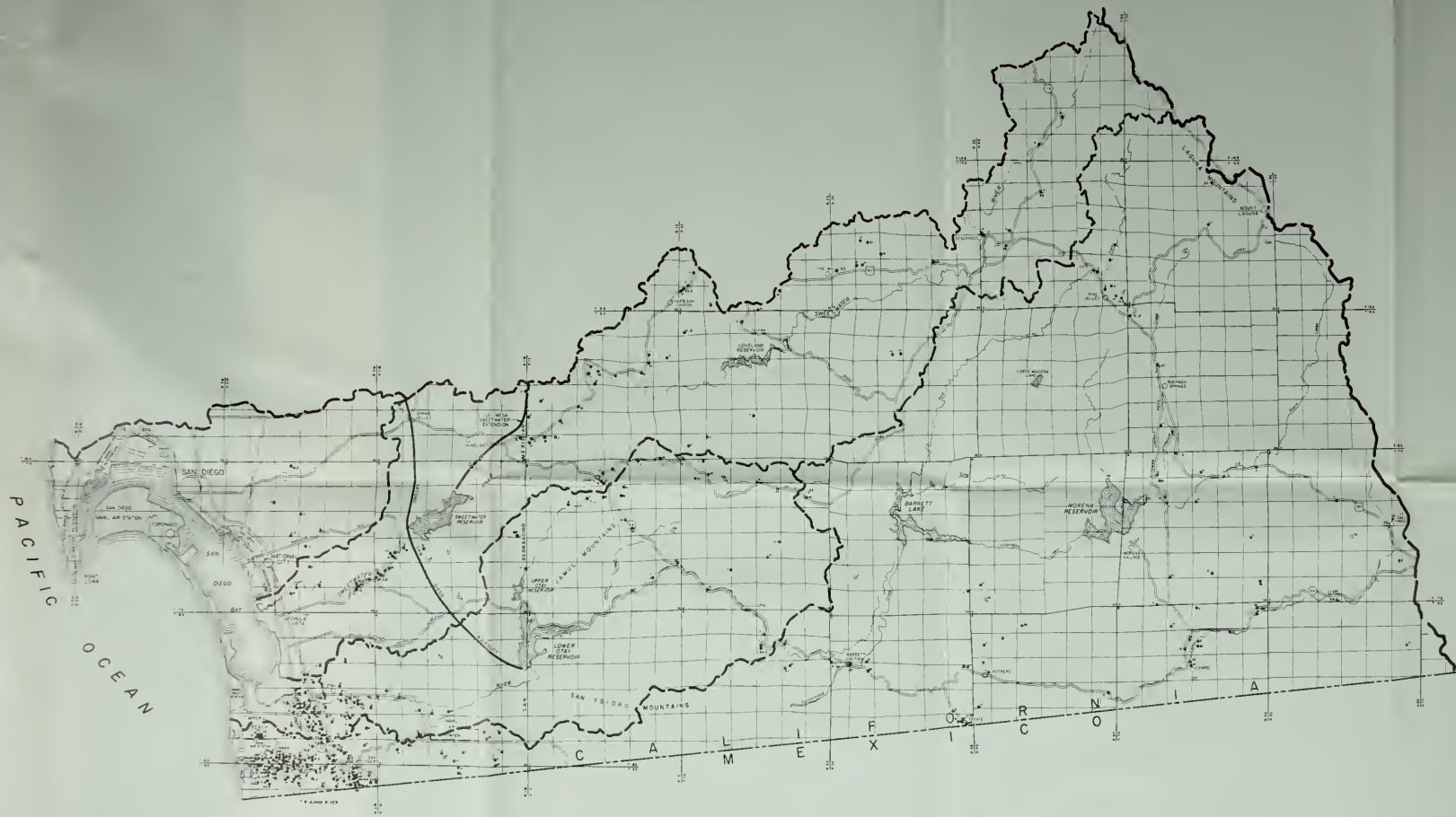


OFFICE OF GEOLOGICAL ENGINEERING
DEPARTMENT OF NATURAL RESOURCES
GROUND WATER OCCURRENCE AND QUALITY
SAN DIEGO, CALIF.
AREAL EXTENT OF TOTAL DISSOLVED SOLIDS
IN GROUND WATER
SCALE OF MILES
0 1 2





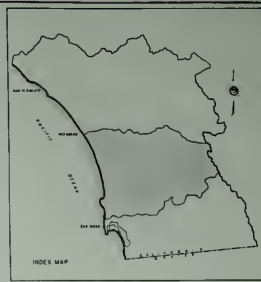




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1:250,000
1:500,000
1:1,000,000
1:2,000,000
1:5,000,000

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SOUTHERN DISTRICT
GROUND WATER OCCURRENCE AND QUALITY
SAN DIEGO REGION
LOCATION OF SELECTED WELLS AND SPRINGS

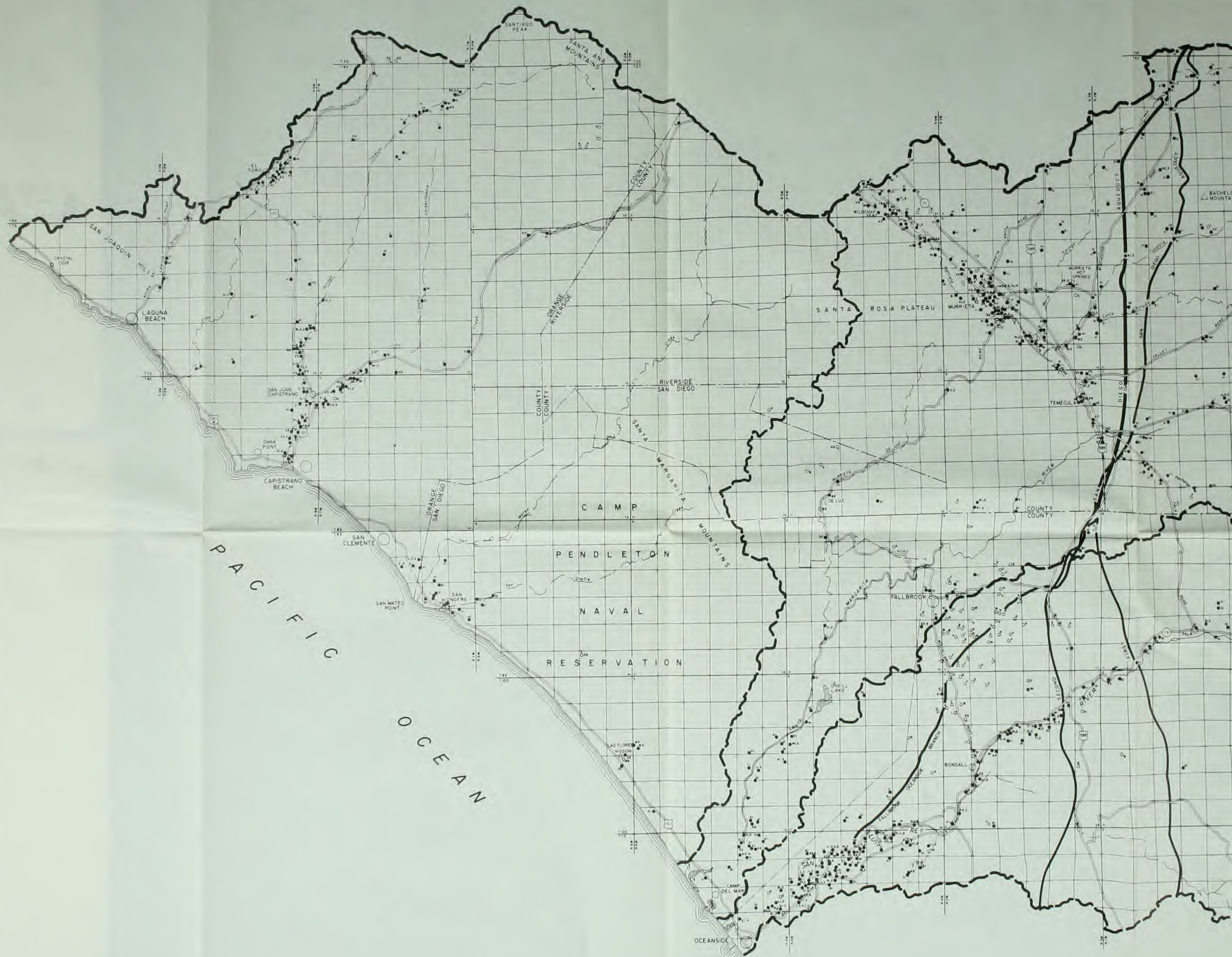


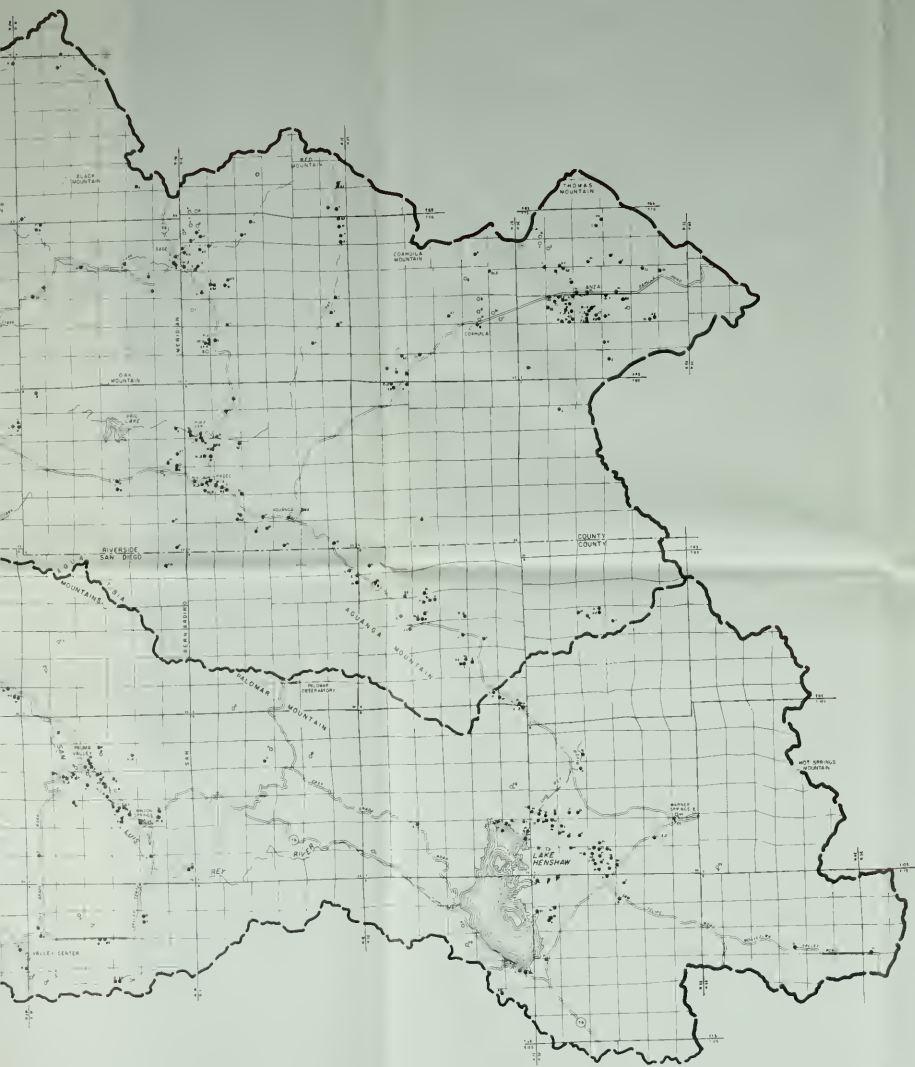
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- LEGEND
- OBSERVED WELL
 - OBSERVED WELL
 - OBSERVED SPRING
 - OBSERVED SPRING

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GROUND WATER OCCURRENCE AND QUALITY
SAN DIEGO REGION
LOCATION OF SELECTED WELLS AND SPRINGS
SCALE OF MILES
0 10 20







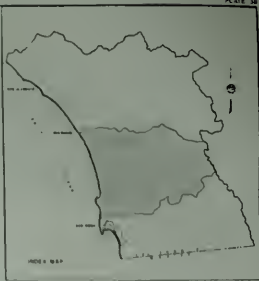
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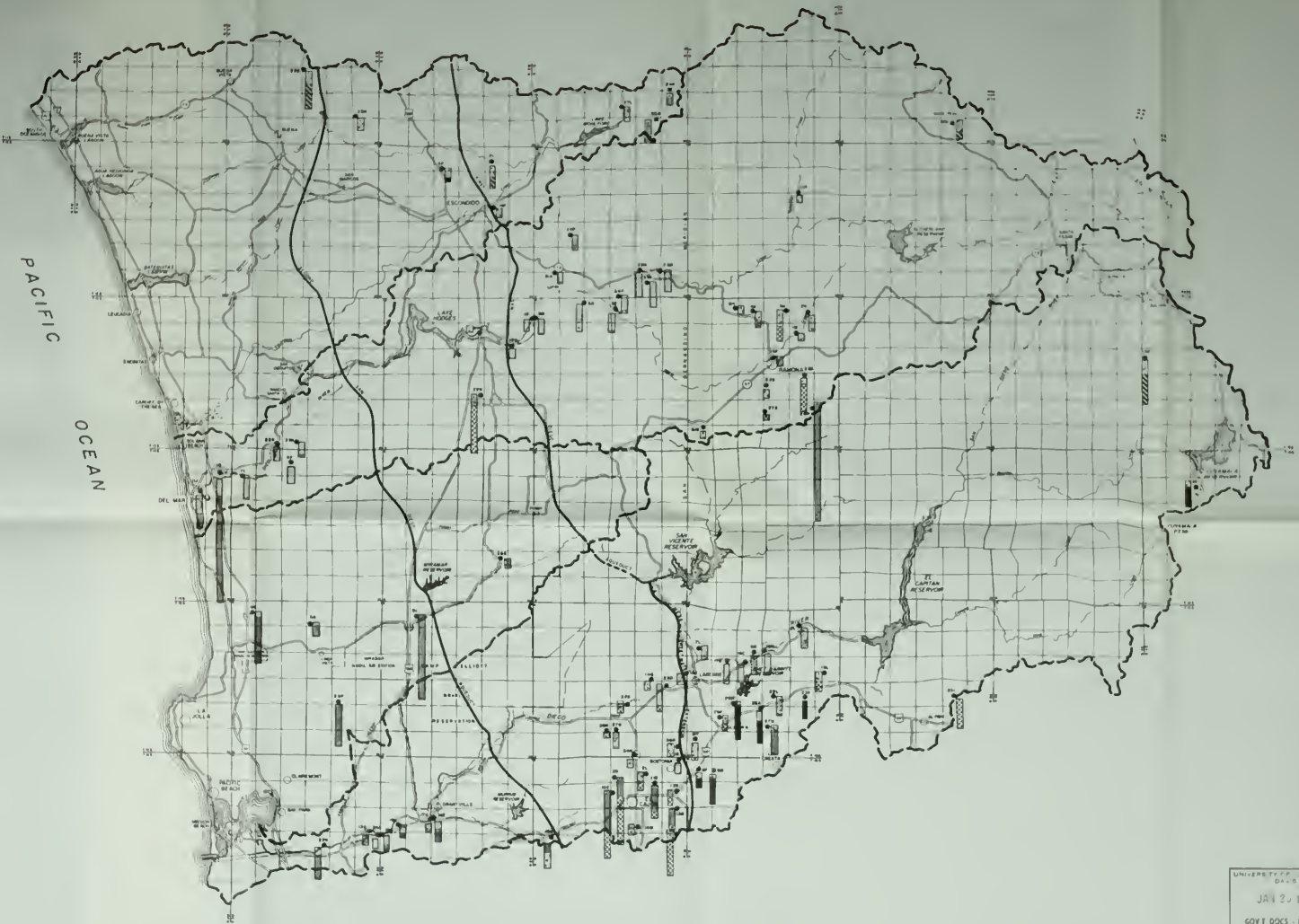
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SOUTHERN DISTRICT
GROUND WATER OCCURRENCE AND QUALITY
SAN DIEGO REGION

LOCATION OF SELECTED WELLS AND SPRINGS



PACIFIC
OCEAN



LEGEND

GENERALIZED ROCK TYPES	AGE
ALUMINUM	QUATERNARY
RESIDUAL	
PLEISTOCENE SEDIMENTS	TERTIARY
PRE-QUATERNARY SEDIMENTS, AND VOLCANIC ROCKS	
GRANODIORITES	MESOZOIC
TORIALITES	
GABBROS AND DIORITES	PALEOZOIC
METAMORPHIC ROCKS	

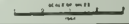


APPROXIMATE LOCATION OF REPRESENTATIVE LITHOLOGIC LOG

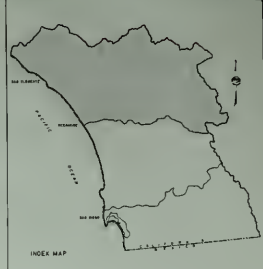
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DIVISION - DISTRICT
UNIFORM WATER DOCUMENTS AND QUALITY
SURVEY REPORT

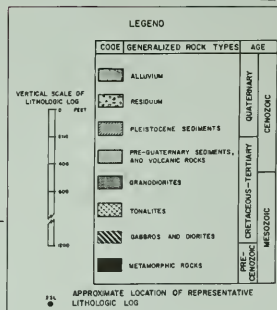
SUBSURFACE LITHOLOGY OF SELECTED AREAS

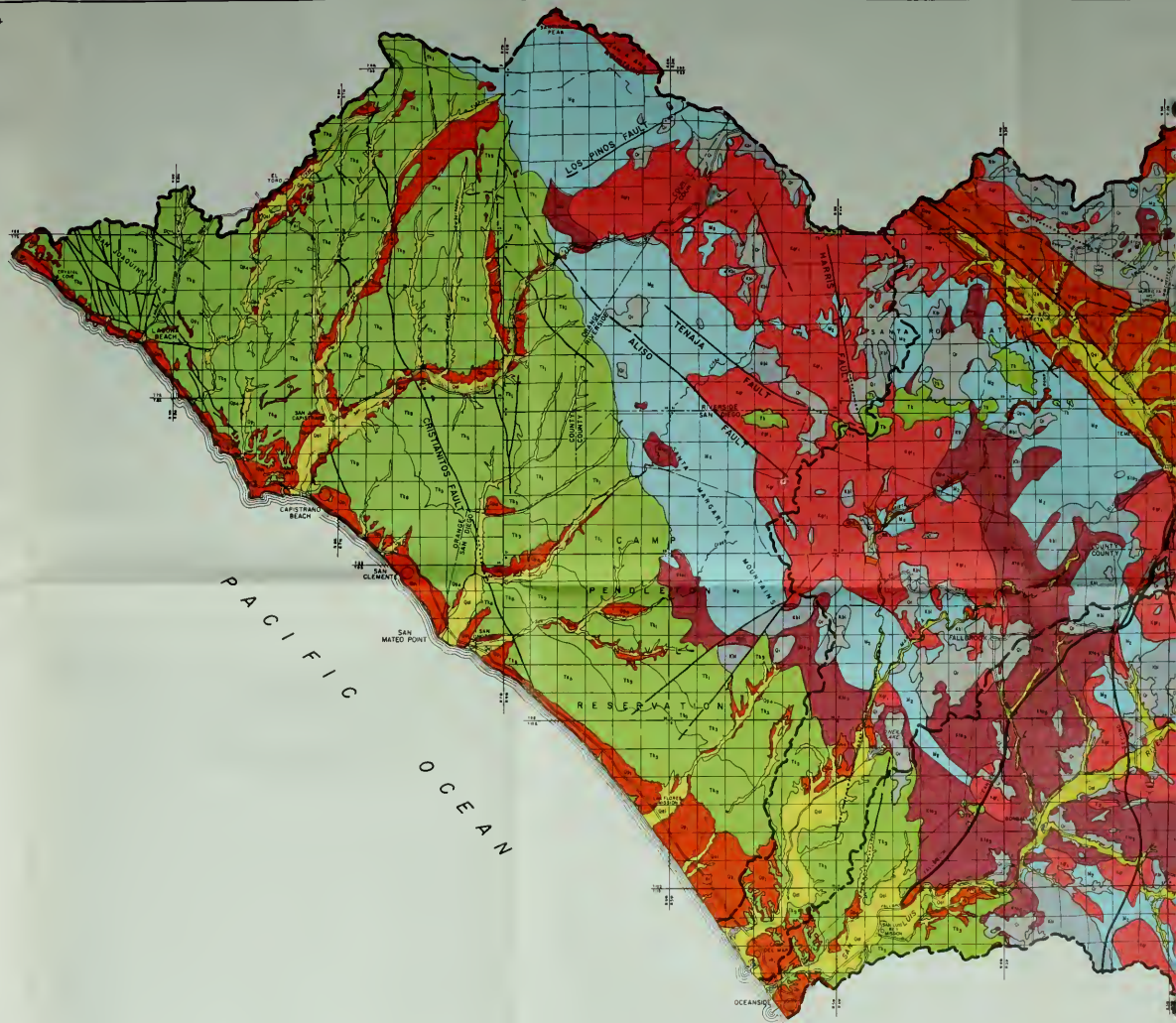


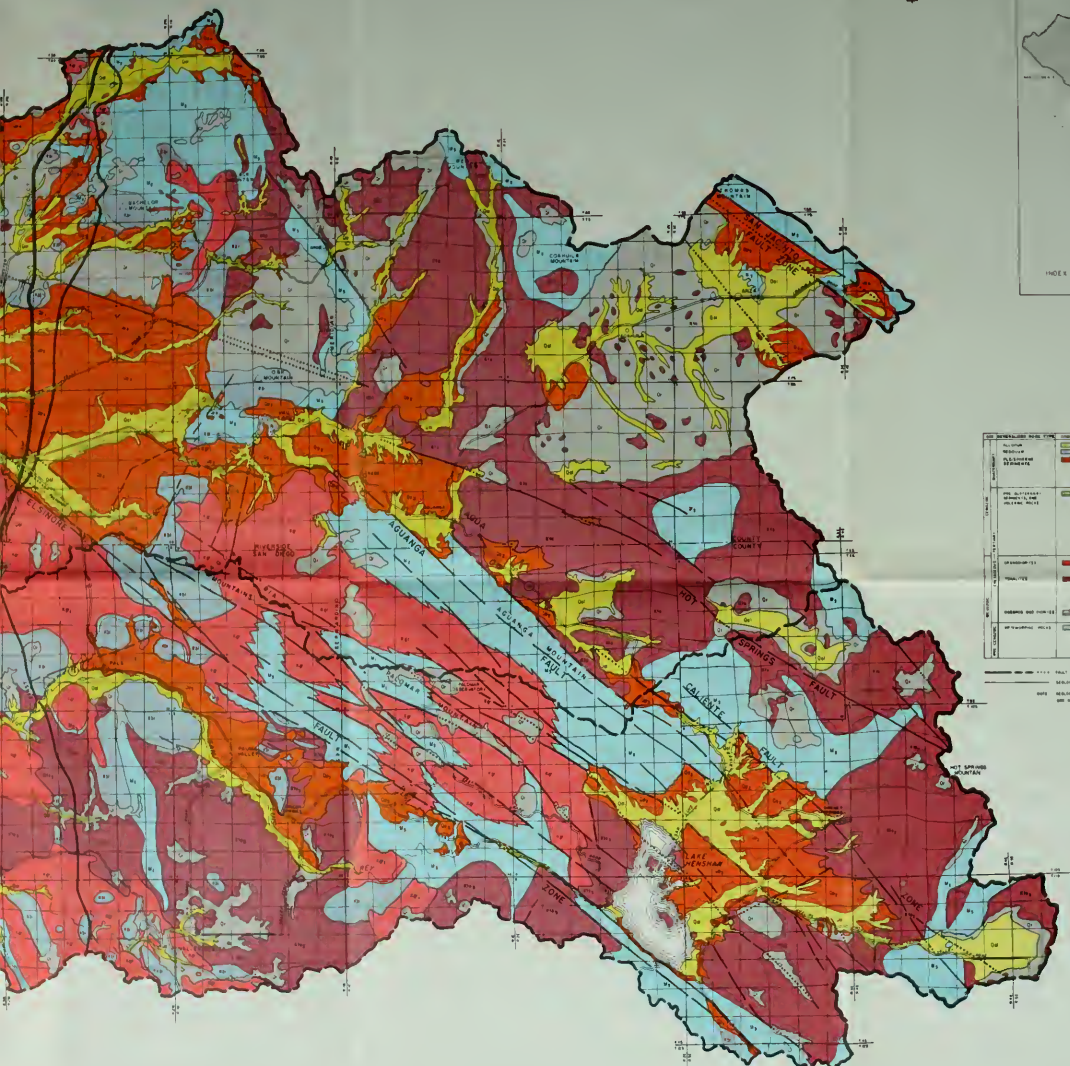




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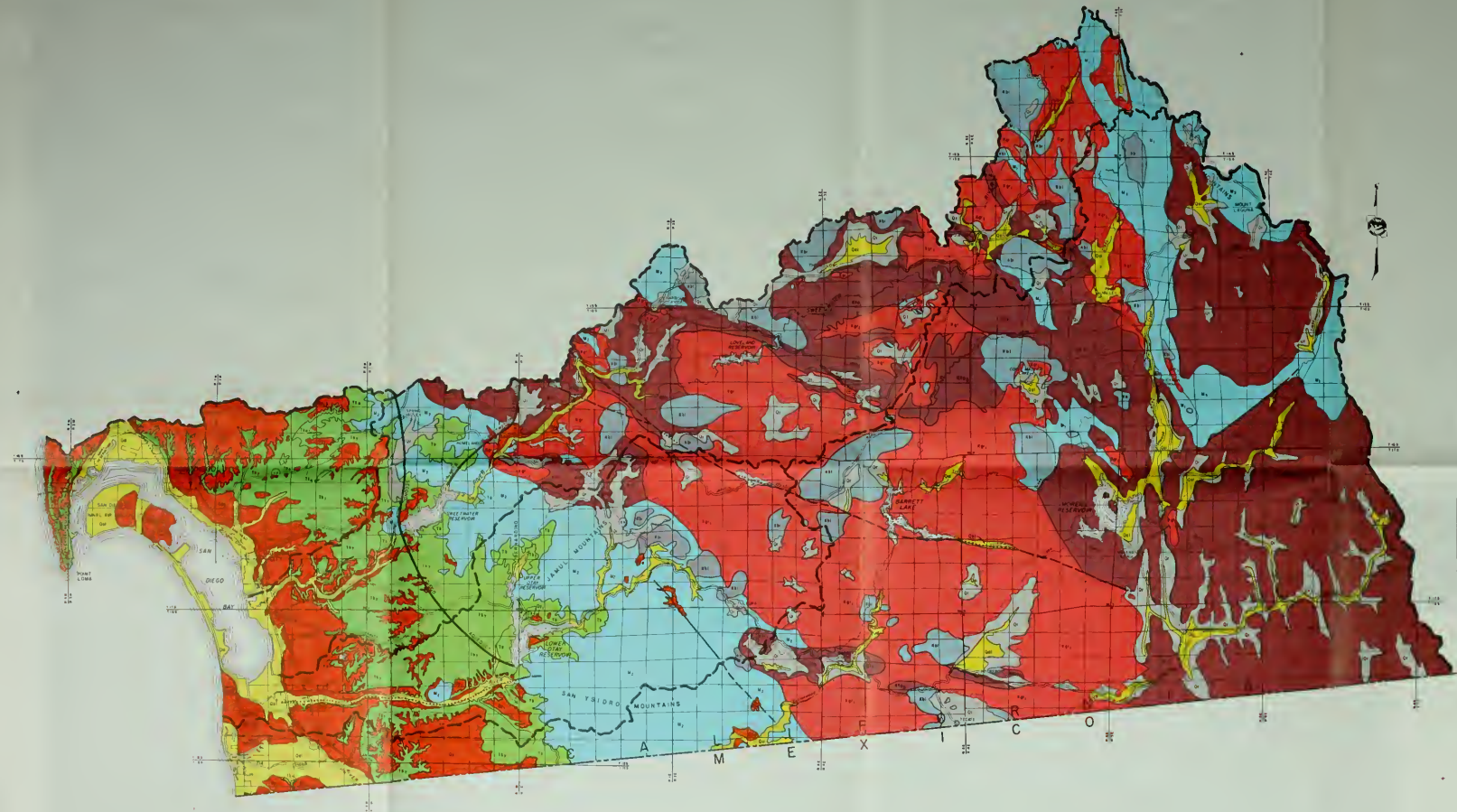
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GROUND WATER OCCURRENCE AND QUALITY
SAN DIEGO REGION

AREAL GEOLOGY

10



LEGEND	
Geological Units	Special Symbols
Qa - Alluvium	W - Water
Qb - Beach	W - Water
Qc - Sand	W - Water
Qd - Gravel	W - Water
Qe - Cobble	W - Water
Qf - Boulders	W - Water
Qg - Clay	W - Water
Qh - Silt	W - Water
Qi - Sand and gravel	W - Water
Qj - Gravel and sand	W - Water
Qk - Cobble and sand	W - Water
Ql - Boulders and sand	W - Water
Qm - Clay and sand	W - Water
Qn - Silt and sand	W - Water
Qo - Sand and gravel	W - Water
Qp - Gravel and sand	W - Water
Qq - Cobble and sand	W - Water
Qr - Boulders and sand	W - Water
Qs - Clay and sand	W - Water
Qt - Silt and sand	W - Water
Qu - Sand and gravel	W - Water
Qv - Gravel and sand	W - Water
Qw - Cobble and sand	W - Water
Qx - Boulders and sand	W - Water
Qy - Clay and sand	W - Water
Qz - Silt and sand	W - Water

Scale 1:50,000. Contour interval 100 feet. Elevation in feet above sea level. The map is based on data collected by the California Division of Mines and Geology.

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AREAL GEOLOGY
SCALE 1:50,000



